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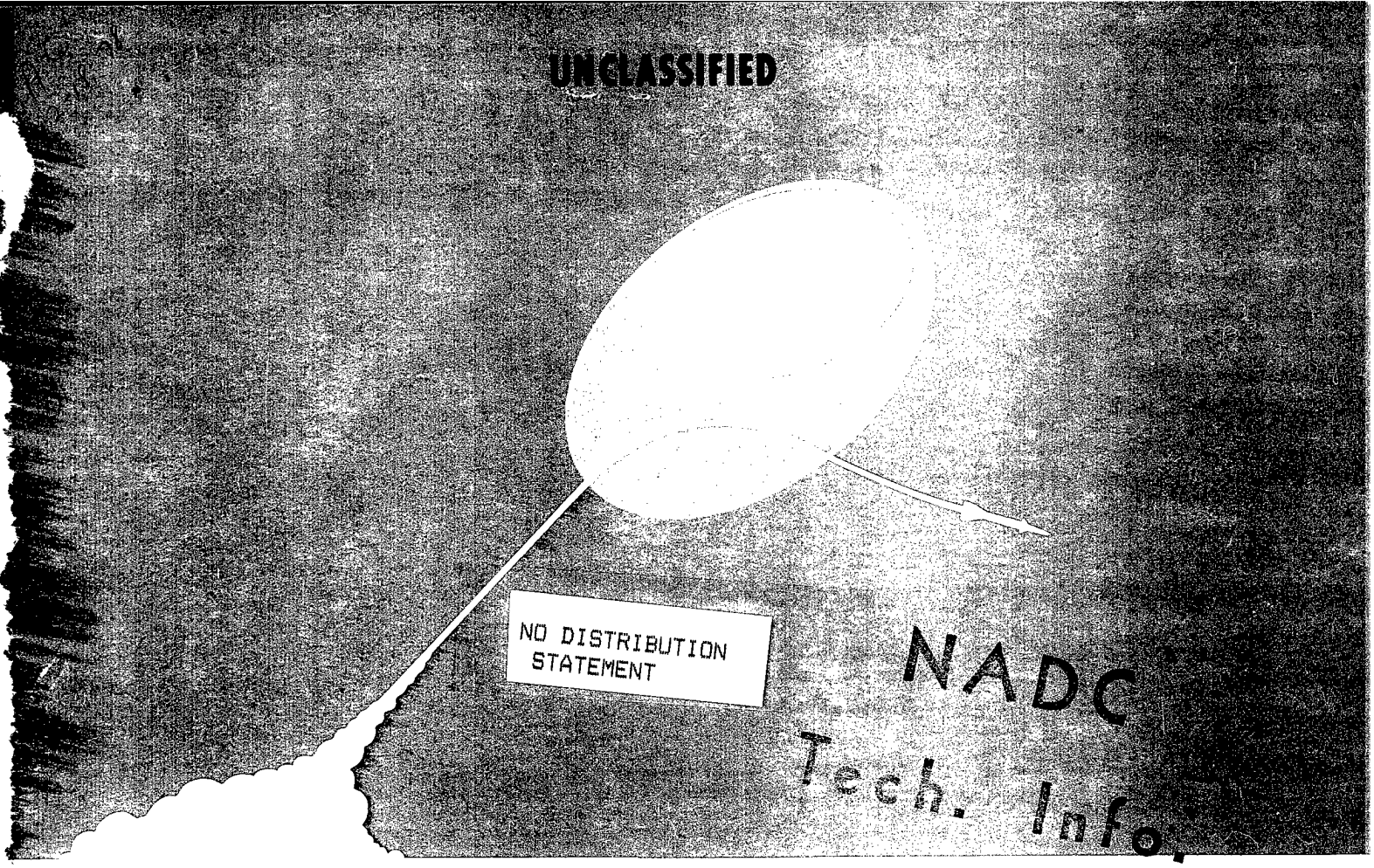


APPENDIX 28

SIGNAL SORTER BIT SOFTWARE SPECIFICATION

FINAL SOFTWARE REPORT

DATA ITEM NO. A005

INTEGRATED ELECTRONIC WARFARE SYSTEM
ADVANCED DEVELOPMENT MODEL (ADM)

7800987-28

PREPARED FOR

NAVAL AIR DEVELOPMENT CENTER
WARMINSTER, PENNSYLVANIA

CONTRACT N62269-75-C-0070

RAYTHEON
ELECTROMAGNETIC
SYSTEMS DIVISION

1 OCTOBER 1977

APPENDIX 28

SIGNAL SORTER BUILT-IN TEST SOFTWARE SPECIFICATION
FINAL SOFTWARE REPORT

DATA ITEM A005

INTEGRATED ELECTRONIC WARFARE SYSTEM (IEWS)
ADVANCED DEVELOPMENT MODEL (ADM)

Contract No. N62269-75-C-0070

Prepared for:

Naval Air Development Center
Warminister, Pennsylvania

Prepared by:

RAYTHEON COMPANY
Electromagnetic Systems Division
6380 Hollister Avenue
Goleta, California 93017

1 OCTOBER 1977

RAYTHEON	RAYTHEON COMPANY LEXINGTON, MASS. 02173	CODE IDENT NO. 49956	SPEC NO. 53959-GT-0772
			SHEET 1 OF / REV

TYPE OF SPEC

Computer Program Design Specification

TITLE OF SPEC

IEWS Signal Sorter BIT Software - Supervisor Tests

FUNCTION	APPROVED	DATE	FUNCTION	APPROVED	DATE
WRITER					

REVISIONS

CHK	DESCRIPTION	REV	CHK	DESCRIPTION	REV

REVISION																							
SHEET NO.																							
REV STATUS OF SHEETS	REVISION																						
	SHEET NO.																						

IEWS SORTER BIT SOFTWARE - SUPERVISOR TESTS

1. INTRODUCTION

The IEWS Sorter Supervisor BIT is an SC-loadable supervisor program that can be used to verify the functional operation of the Input Buffer (IB), Track Correlator Coarse Search Unit (CSU), and the Track Correlator Fine Search Unit (FSU).

2. DESCRIPTION OF OUTPUT

2.1 SORTER TO SC MESSAGES

2.1.1 Bus Hung Message

A high-priority bus hung message (Op-Code = $8D_{16}$) is sent to the SC if the Supervisor bus is not responding. If a true Supervisor bus hung condition is detected, the contents (at the time of the interrupt) of the Supervisor A, E, B, X, S, and P registers can be found in Supervisor memory locations 81, 82, 83, 84, 85, and 86_{16}, respectively.

2.1.2 Test Failure Messages

Execution of the Sorter Supervisor Bit may result in one of more low-priority test failure messages (Op-Code = 93_{16}) being sent to the SC. The format of the failure information contained in the message is described in Figure 4.

2.1.3 End of Sorter Supervisor Bit Program

If the Sorter Supervisor Bit program terminates normally, a low-priority (Op-Code = 93_{16}) message is sent to the SC. This message can be distinguished from the Test Failure Messages by the fact that all data words for the End of Test message are $FFFF_{16}$.

2.1.4 Sample Output

A Sudbury SC Simulator printout, resulting from the execution of the Sorter Supervisor Bit, is shown in Figure 1.

3. DESCRIPTION OF PROCEDURE

3.1 MAIN PROGRAM

The main program is a very simple routine that processes the Test Table. The main program flowchart is shown in Figure 2.

3.2 TEST TABLE

The Test Table defines the Sorter Supervisor Bit sequence of tests. The test table is a list of test routine addresses. Each test routine may be followed by one or more arguments (masks, data to be loaded into registers, pointers to PDW's, etc.). The Test Table is functionally described by Table 1. The sequence numbers shown in Table 1 appear as comments in the assembly listing of the Test Table. The test numbers that appear in the Test Failure Messages are not these sequence numbers. The message test numbers have been manually added to the assembly listing. Note that the Test Failure Message test number can be mapped to the assembly listing which is mapped to the Test Description (Table 1).

3.3 TEST DATA

The Test Table Description (Table 1) references test data, e.g., PDW No. 1, Track File 31_{10}, etc. This data is defined in the assembly listing as follows:

Mnemonic	Description
TF31	Track File 31_{10} Data
TF32	Track File 32_{10} Data
TF85	Track File 85_{10} Data
TF106	Track File 106_{10} Data
PDW1	PDW No. 1
REPDW1	Reformatted PDW No. 1
TFNULL	Null Track File
PDWNULL	Null PDW
CF1	CAM File 1 Data
BPDW1	Reformatted PDW No. 1
CF2	CAM File 2 Data
TFCS31	Expected Coarse Search Memory Contents Track File 31_{10}
TFCS32	Expected CSU Mem. Track File 32_{10}

3.3 TEST DATA (Cont'd)

Mnemonic	Description
TFCS85	Expected CSU Memory Track File 85_{10}
TFCS106	Expected CSU Memory Track File 106_{10}
TFFS31	Expected Fine Search Update Registers Contents Track File 31_{10}
TFFS32	Expected Fine Search Update Registers Contents Track File 32_{10}
TFFS85	Expected Fine Search Update Registers Contents Track File 85_{10}
TFFS106	Expected Fine Search Update Registers Contents Track File 106_{10}

3.4 TEST ROUTINES

Test routines are simple routines called by the main program to issue one command, perform one register contents verification, etc. Each test routine may have one or more arguments. The comments in the assembly listing describe the function of each test routine. All test routines exit to main program (JUMP TO RETURN). The GETARG subroutine is called by test routines to retrieve arguments from the test table. A flowchart of a typical test routine is shown in Figure 1.

3.5 BUS HUNG INTERRUPT PROCESSING

The Bus Hung Interrupt is enabled at the start of the Test Table (ENBBHUNG). Test 2 (CKBHRUPT) verifies the operation of this interrupt. The Bus Hung Interrupt remains enabled throughout the entire Supervisor BIT. Flowcharts of the Bus Hung Interrupt Handler (BHRUPT) and the Bus Hung Interrupt Test Routine (CKBHRUPT) are shown in Figure 3.

IEWS SORTER SUPERVISOR BIT TEST DESCRIPTION

I. CHECKOUT INPUT BUFFER

1. Master Clear
2. Initialize IB.
3. Initialize TC.
3 4. Verify proper IB status bits.
1,4 5. Verify proper TC status bits.
6. Set BPDW Processing Flag.
7. Set UPDW Flag.
8. Reset BM Formatter Flag.
9. Set TC Run Flag
5 10. Verify proper TC status bits.
11. Reset BPDW Processing Flag.
12. Set BM Formatter Flag.
6 12a. Clear all Track Files.
13. Load TC DBR's with Track File $(31)_{10}$.
14. Write Track File $(31)_{10}$.
7 15. Clear DBR's.
8 16. Read Track File $(31)_{10}$.
9 17. Verify proper data.
A 18. Read Coarse Search Memory Track File $(31)_{10}$.
B 19. Verify proper data.
20. Load TC DBR's with Track File $(32)_{10}$.
C 21. Write Track File $(32)_{10}$.
D-10 22. Load TC DBR's with Track File $(85)_{10}$.
23. Write Track File $(85)_{10}$.
24. Load TC DBR's with Track File $(106)_{10}$.
25. Write Track File $(106)_{10}$.

TABLE 1

I. CHECKOUT INPUT BUFFER (Cont'd)

25a. Clear all IB CAM Files.

26. Set IB Run Mode.

27. Check IB status and verify.

28. Store Frequency to IB DBR 0.

29. Store Valid and Azimuth to IB DBR 1.

30. Store Reduction Factor to IB DBR 3.

31. Store Frequency to IB CAM File 7.

32. Store Valid and Azimuth to IB CAM File 7.

33. Store Reduction Factor to IB CAM File 7.

34. Read CAM File 7 parameters and verify.

35. Store PDW #1 to IB DBR's 0-3.

36. Check TC BPDW Ready Status Bit not set.

37. Execute Process Supervisor PDW command to IB.

38. Check TC BPDW Ready Status Bit set.

39. Execute Read BPDW command to TC.

40. Verify proper data.

41. Flush BPDW.

42. Check TC BPDW Ready Status Bit not set.

43. Store Reduction Factor of F_{16} to IB DBR 3.

44. Store Reduction Factor to IB CAM File 7.

45. Store PDW #1 to IB DBR's 0-3.

46. Execute 240 consecutive Process PDW commands to IB and verify TC BPDW Ready Status Bit is not set.

47. Execute 1 Process PDW command and verify TC BPDW Ready Status Bit is set.

48. Execute Read BPDW command to TC and verify same as PDW #1.

II. CHECK TC CSM INTERROGATE AND ADDRESS GENERATION

49. Load reformatted PDW #1 into TC DBR's 0,6.
50. Issue "Interrogate CSM" to TC.
51. Issue "Read Match Address Register".
52. Read TC IR.
53. Verify Track File 31 present in Bits 0-6.
54. Issue "Read MAR".
55. Read TC IR.
56. Verify Track File 32 present.
57. Issue "Read MAR".
58. Read TC IR.
59. Verify Track File 85 present.
60. Issue "Read MAR".
61. Read TC IR.
62. Verify Track File 106 present.
63. Issue "Read MAR".
64. Read TC IR.
65. Verify Bit 7 set (no more matches).

III. CHECK TC FSU

65a. Reset BPDW processing flag

66. Load PDW #1 into TC DBR's.
67. Issue "Load Synthetic PDW" to TC.
68. Issue "Reset FSU" to TC.
69. Load Track File 31 into TC DBR's.
70. Issue "Process Synthetic Track File 31".
70a. Load TC DBR's with Ø's.
71. Issue "Read FSU Update Registers".
72. Read DBR's and verify proper results.

73-77.
78-82. Repeat bracketed area for Track Files 32, 85, 106.
83-87.

UNIT NO. AND PFI CODE	TRACK NO.	TEST NO.	TEST TABLE PTR	ACTUAL DATA	EXPECTED	INDEX	LAST COMMAND	CONTROL STATUS WORD	INTERRUPT STATUS WORD				
93	03	0000	0000	12B4	0000	7FE9	0000	761F	86F8	8041	0000	8041	86F8
93	03	0000	0018	12C7	0000	7FC9	0000	7720	86F8	8041	0000	8041	86F8
93	03	0000	001A	12ED	0000	7FE9	0000	7766	86F8	8041	0000	8041	86F8
93	03	0000	001F	1310	0000	1000	0000	C000	86F8	8041	0000	8041	86F8
93	03	0000	0021	1317	E2D4	AAA8	0008	8000	86F8	8041	0000	8041	86F8
93	03	0000	0025	132D	0000	1000	0001	8A00	86F8	8041	0000	8041	86F8
93	03	0000	0027	1332	E2D4	AAA8	0008	8000	86F8	8041	0000	8041	86F8
93	05	0000	002A	1330	A655	A61F	0000	A655	88F8	0000	0000	8041	88F8
93	05	0000	002C	1343	A660	A620	0000	A660	88F8	0000	0000	8041	88F8
93	05	0000	002F	1349	A661	A655	0000	A661	88F8	0000	0000	8041	88F8
93	05	0000	0031	134F	A662	A66A	0000	A662	88F8	0000	0000	8041	88F8
93	05	0000	0032	1355	A600	A660	0000	A663	88F8	0000	0000	8041	88F8
93	05	0000	0036	1365	0470	0070	0008	B400	8AF8	0000	0000	8041	8AF8
93	05	0000	003A	1374	0070	0470	0008	B400	8AF8	0000	0000	8041	8AF8
93	05	0000	003E	1382	0C6A	1068	0008	B400	8CF8	0000	0000	8041	8CF8
93	05	0000	0042	1390	0C73	0C74	0008	B400	8EF8	0000	0000	8041	8EF8
93	00	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF	FFFF

Figure 1. Sudbury SC Simulator BIT Printout

FLOW CHART

REMARKS

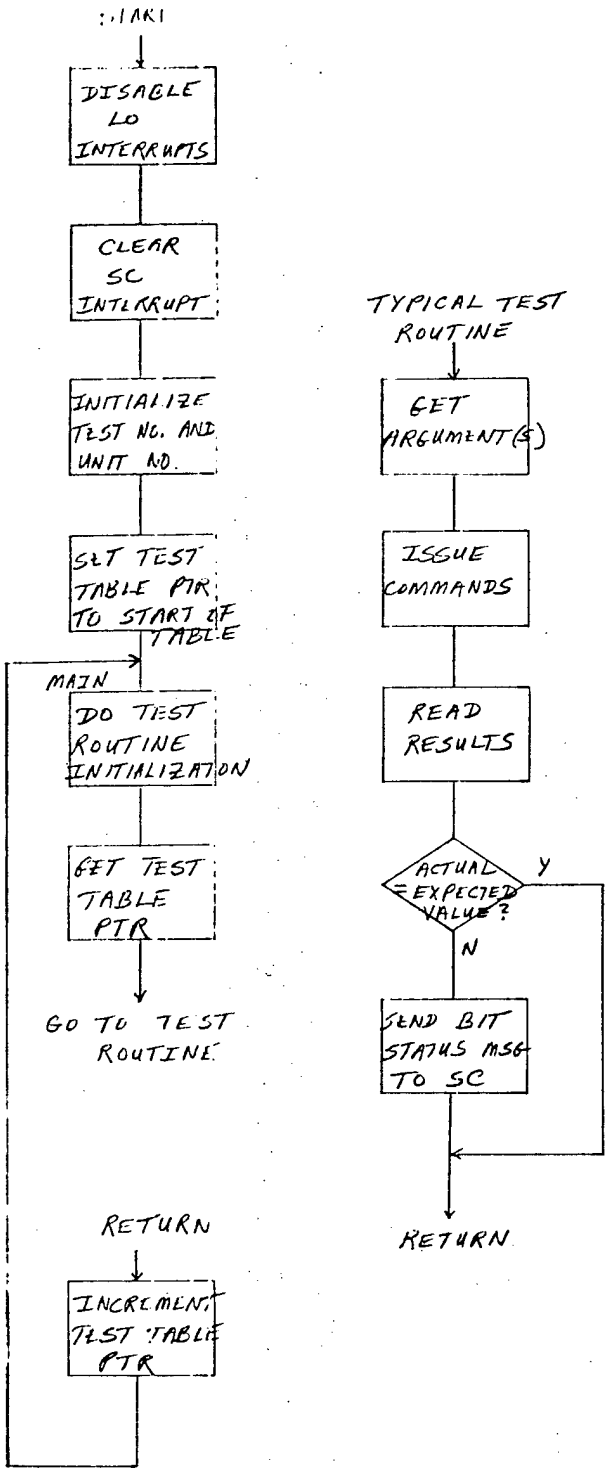


Fig. 2

RAYTHEON COMPANY
LEXINGTON, MASS. 02173

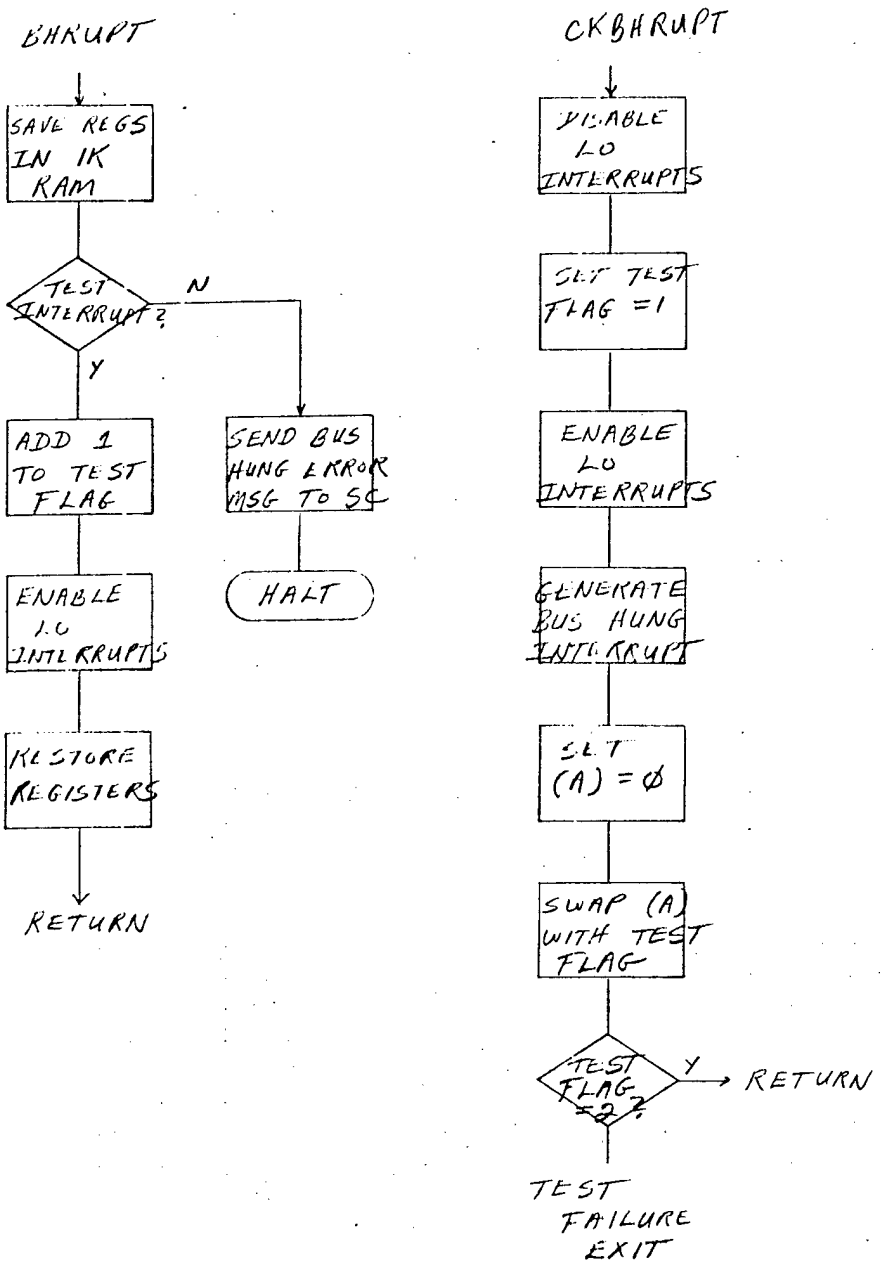
PROGRAM/ROUTINE/SUBROUTINE/ACRONYM: IEWS SORTER BIT MAIN PROGRAM (SUPV TESTS)

CODE IDENT NO: 49956 | PREPARED BY: T. CHLRNLSKT | DATE: 19 MAY 76

NUMBER | SHEET 1 OF 1

8

FLOW CHART



REMARKS

BHRUPT = BUS HUNG INTERRUPT HANDLER

CKBHRUPT = TEST BUS HUNG INTERRUPT ROUTINE

Fig. 3

RAYTHEON COMPANY
LEXINGTON, MASS. 02173

PROGRAM/ROUTINE/SUBROUTINE/ACRONYM ILWS SORTER BIT BUS HUNG HANDLING (SUPV TESTS)

CODE IDENT NO 49956 | PREPARED BY T. CHERNESKY | DATE 24 JUN 76

NUMBER | SHEET 1 OF 1

FLOW CHART

OP CODE 93_{16}	BIT ERROR CODE	PFI
	FILE NO. IN ERROR	
TEST NUMBER		
TEST TABLE POINTER		
ACTUAL DATA		
EXPECTED DATA		
INDEX (IF APPLICABLE)		
LAST COMMAND ISSUED TO UNIT		
CONTROL STATUS WORD		
INTERRUPT STATUS WORD (IF APPLICABLE)		
NOT USED		
NOT USED		
NOT USED		
NOT USED		
NOT USED		

REMARKS

BEC = UNIT NO.:
ØI = IB
Ø2 = TC

PFI:
Ø = PASS
1 = FAIL

Fig. 4

RAYTHEON COMPANY
LEXINGTON, MASS. 02173

PROGRAM/ROUTINE/SUBROUTINE/ACRONYM: IL WS SORTER BIT STATUS MSG FORMAT (SUPV TESTS)

CODE IDENT NO: 49956
PREPARED BY: T. CHERNESKY
DATE: 24 JUN 76
NUMBER:
SHEET 1 OF 1

```
0000R 804C   0002            JUMP  (=START)
0001R 0005R
             0003  *
             0004  *   MACRO TO CREATE AND VERIFY 1 TRACK FILE
             0005  *
             0006  GENTRK   MACR      TRK
             0007           DC    LOADTCOB
             0008           DC    TF:TRK
             0009           DC    TEST....
             0010           DC    WRTRACK
             0011           DC    TRK
             0012           DC    LOADTCOB,TFNULL
             0013           DC    TEST....
             0014           DC    RDTRACK
             0015           DC    TRK
             0016           DC    TEST....
             0017           DC    CKTCOB,TF:TRK
             0018           DC    TEST....
             0019           DC    RDCSM
             0020           DC    TRK
             0021           DC    TEST....
             0022           DC    CKCSM,TFCS:TRK
             0023           ENDM
             0024  *
             0025  *   MACRO TO READ AND VERIFY FSU UPDATE REGISTERS
             0026  *          FOR  1  TRACK FILE
             0027  CKFSU    MACR    TRK
             0028           DC    TEST....
             0029           DC    RESETFSU
             0030           DC    LOADTCOB,TF:TRK
             0031           DC    TEST....
             0032           DC    TCPSTF
             0033           DC    TRK
             0034           DC    LOADTCOB,TFNULL
             0035           DC    TEST....
             0036           DC    RDFSUDR
             0037           DC    TEST....
             0038           DC    CKTCOB,TFFS:TRK
             0039           ENDM
             0040  *
             0041  *    MACRO TO GENERATE FAULT DETECTED SEQUENCE
             0042  *
             0043  ERROR    MACR
             0044           JUMP  (=ERR1)
             0045           ENDM
             0046  *
             0047  *  TC CONTROL ADDRESSES
             0048  *
0000         0049  SKTCIR   EQU   '150000     TC INSTRUCTION REG.
0001         0050  SKTCISW  EQU   '150001     TC INTERRUPT STATUS WORD
0002         0051  SKTCSTAT EQU   '150002     TC STATUS
0003         0052  SKTCSEQ1 EQU   '150003     TC SEQUENCER WORD 1
0004         0053  SKTCSEQ2 EQU   '150004     TC SEQUENCER WORD 2
0005         0054  SKTCSEQ3 EQU   '150005     TC SEQUENCER WORD 3
```

```
                0055  SFRESET  EQU  !150006   RESET WATCHDOG TIMER
                0056  SFTCINIT EQU  !150007   INITIALIZE TC CONTROL
                0057  SFTCBPDU EQU  !150010   DISABLE BPDW PROCESSING
                0058  SFTCBPDE EQU  !150011   ENABLE
                0059  SKDUPDW  EQU  !150012   DISABLE UPDW'S TO AUX
                0060  SKEUPDW  EQU  !150013   ENABLE
                0061  SFTCBUFD EQU  !150014   DISABLE BUFFER MEMORY
                0062  SFTCBUFE EQU  !150015   ENABLE
                0063  SFTCRUN  EQU  !150016   SET TC RUN MODE
                0064  SFTCSTEP EQU  !150017   SINGLE STEP TC
                0065  SKTCDB   EQU  !142000   TC DATA BUFFER REG 0
                0066  *
                0067  *    IB  CONTROL  ADDRESSES
                0068  *
                0069  SFFLSHIB EQU  !150042   FLUSH CURRENT PE/STE PDW
                0070  SFRPDWIB EQU  !150043   READ  CURRENT PE/STE PDW
                0071  SFINFIFO EQU  !150044   INIT IB FIFO
                0072  SFINITIB EQU  !150045   INIT IB CONTROL
                0073  SFENBIB  EQU  !150046   ENABLE IB PDW PROCESSING
                0074  SFDSBIB  EQU  !150047   DISABLE IB PDW PROCESSING
                0075  SFSTEPIB EQU  !150050   SINGLE STEP IB
                0076  SFSSSIB  EQU  !150051   SET IB SINGLE STEP MODE
                0077  SFRUNIB  EQU  !150052   SET IB RUN MODE
                0078  SFIBIR   EQU  !150053   IB  INSTRUCTION/STATUS REG.
                0079  SKIBDB   EQU  !150054   IB DATA BUFFER REG 0
                0080  SFRDVAZ  EQU  !150060   READ V,AZ,FREQ, CAM FILE 0
                0081  SFRDRF   EQU  !150070   READ REDUCT. FACTOR, CAM F 0
4800            0082  SKWRTF   EQU  %4800     TC WRITE TRACK FILE COMMAND
5400            0083  SKRDTF   EQU  %5400     TC READ TRACK FILE COMMAND
7E00            0084  SKTCHALT EQU  %7E00     HALT TC
                0085  *
                0086  *
FEFF            0087  SFPINMSK EQU  !177377   PIN MASK REG.
2710            0088  WAITCT   EQU  10000
0051            0089  SBMSGLO  EQU  !121
0041            0090  SBMSGHI  EQU  !101
0011            0091  SFMSGHI  EQU  !21
0010            0092  CFMSGHI  EQU  !20
0081            0093  SBHUNG   EQU  !201
0140            0094  STACK    EQU  !500
0054            0095  TTNO     EQU  !124
0055            0096  TTPTR    EQU  !125
0056            0097  ACTUAL   EQU  !126
0057            0098  EXPECT   EQU  !127
0058            0099  INDEX    EQU  !130
0059            0100  CMND     EQU  !131
005A            0101  CSTATUS  EQU  !132
005B            0102  ISTATUS  EQU  !133
0053            0103  TRACK    EQU  !123
0059            0104  TCIR     EQU  CMND
005B            0105  TCISW    EQU  ISTATUS
005A            0106  TCSTATUS EQU  CSTATUS
0059            0107  IBIR     EQU  CMND
005A            0108  IBSTATUS EQU  CSTATUS
```

```
                005D    0109  DTCISW   EQU   '135          DEBUG ONLY
                005E    0110  DTCSTAT  EQU   '136          DEBUG ONLY
                005F    0111  DIBSTAT  EQU   '137          DEBUG ONLY
0002R 0001      0112  BHTEST   RESV  1
0003R 0001      0113  TESTNO   RESV  1
0004R 0001      0114  UNITNO   RESV  1
                0115  *
                0116  *    MAIN  PROGRAM  -  TEST TABLE PROCESSOR
                0117  *
                0005R 0118  START    EQU   #
0005R B805      0119           DLOI
0006R 104C      0120           LDSA  (=CFMSGHI)  CLR SC INTERRUPT
0007R 0010
0008R 1088      0121           LDSS  =STACK
0009R 0140
000AR 6624      0122           XORA  A
000BR 06F7      0123           STSA  TESTNO
000CR 06F7      0124           STSA  UNITNO
000DR 108C      0125           LDSA  =SORTTEST
000ER 0281R
000FR 0604      0126           STSA  PTR           INIT PTR
                0010R 0127  MAIN     EQU   #
0010R B04C      0128           JSUB  (=RINIT)
0011R 001FR
0012R 1601      0129           LDSA  PTR
0013R 8064      0130           JUMP  (A*)          GO TO ROUTINE
0014R 0001      0131  PTR      DS    1
0015R C6FE      0132  RETURN   ISEZ  PTR           TEST ROUTINE RETURN POINT
0016R 86F9      0133           JUMP  MAIN
                0134  *
                0135  *  SUBROUTINE TO GET 1 ARGUMENT FROM TEST TABLE
                0136  *
0017R C6FC      0137  GETARG   ISEZ  PTR
0018R 104C      0138           LDSA  (=PTR)        GET PTR TO ARG
0019R 0014R
001AR 10A4      0139           LDSA  A*            GET VALUE
001BR 8044      0140           JUMP  (S*)
                0141  *
                0142  *    PAUSE ROUTINE
                0143  *         (A)  =   LOOP COUNT (SHOULD BE POSITIVE)
                0144  *
001CR C824      0145  WAIT     DSEZ  A
001DR 86FE      0146           JUMP  WAIT
001ER 8044      0147           JUMP  (S*)
                0148  *
                0149  *  INITIALIZATION TO BE DONE PRIOR TO EACH TEST ROUTINE
                0150  *
                001FR 0151  RINIT    EQU   #
001FR 6624      0152           XORA  A
0020R 108D      0153           LDSE  =7
0021R 0007
0022R 108A      0154           LDSP  =SBMSGL0+1
0023R 0052
0024R 0694      0155  RINIT01  STSA  A*            CLR 7 WDS OF MSG BUFF
```

```
0025R C62C    0156          DSEZ  E
0026R 86FD    0157          JUMP  PINI1#1
0027R 8044    0158          JUMP  (S*)
              0159  *
              0160  *   ERROR DETECTED,  SEQUENCE NO. 1
              0161  *
        0028R 0162  ERR1    EQU   #
0028R 104C    0163          LDSA  (=SBMSGLO)
0029R 0051
002AR 96FD    0164          JNGA  #-2
002BR 104C    0165          LDSA  (=SKTCISW)
002CR 0001
002DR 004C    0166          STSA  (=DTCISW)
002ER 005D
002FR 104C    0167          LDSA  (=SKTCSTAT)
0030R 0002
0031R 004C    0168          STSA  (=DTCSTAT)
0032R 005E
0033R 104C    0169          LDSA  (=SFIRIR)
0034R 0028
0035R 004C    0170          STSA  (=DIBSTAT)
0036R 005F
0037R 104C    0171          LDSA  (=TESTNO)
0038R 0003R
0039R 004C    0172          STSA  (=TTNO)
003AR 0054
003BR 104C    0173          LDSA  (=PTR)
003CR 0014R
003DR 004C    0174          STSA  (=TTPTR)
003ER 0055
003FR 108C    0175          LDSA  =%9301
0040R 9301
0041R 604C    0176          IORA  (=UNITNO)
0042R 0004R
0043R 004C    0177          STSA  (=SBMSGLO+1)
0044R 0052
0045R 108C    0178          LDSA  =%800F
0046R 800F
0047R 004C    0179          STSA  (=SBMSGLO)
0048R 0051
0049R 104C    0180          LDSA  (=SBMSGLO)
004AR 0051
004BR 96FD    0181            JNGA  #-2
004CR 804C    0182          JUMP  (=RETURN)
004DR 0015R
              0183  *
              0184  *   BUS HUNG INTERRUPT HANDLER
              0185  *
004ER 084C    0186  BERUPT  STDA  (=SBHUNG)
004FR 0081
0050R 004A    0187          STSR  (=SBHUNG+2)
0051R 0083
0052R 004B    0188          STSX  (=SBHUNG+3)
0053R 0084
```

```
0054R 0046   0189              STSS   (=SPHUNG+4)
0055R 0085
0056R 1700   0190              LDSA   0,S
0057R 004C   0191              STSA   (=SBHUNG+5)
0058R 0086
0059R 104C   0192              LDSA   (=BHTEST)
005AR 0002R
005BR 9E0A   0193              JFZA   BHRUPT1     NOT A TEST
005CR C04C   0194              ISEZ   (=BHTEST)   INCR   TEST   FLAG
005DR 0002R
005ER 184C   0195  BHRUPT0     LDDA   (=SBHUNG)
005FR 0081
0060R 1A4A   0196              LDSB   (=SBHUNG+2)
0061R 0083
0062R 1A4B   0197              LDSX   (=SBHUNG+3)
0063R 0084
0064R B806   0198              ELOI
0065R 8044   0199              JUMP   (S*)
             0200  *
0066R 104C   0201  BHRUPT1     LDSA   (=SBMSGHI)  IS TO-SC HI-PRI MSG BUFF BUSY
0067R 0041
0068R 96FD   0202              JNGA   *-2
0069R 1A8C   0203              LDSA   =%bD00          SEND PUSHUNG MSG TO SC
006AR BD00
006BR 004C   0204              STSA   (=SBMSGHI+1)
006CR 0042
006DR 1A8C   0205              LDSA   =%b001          SET MSG FLAG
006ER 8001
006FR 004C   0206              STSA   (=SBMSGHI)
0070R 0041
0071R 004C   0207              STSA   (=SFMSGHI)  INTERRUPT THE SC
0072R 0011
0073R B800   0208              HALT
             0210              LIST   EJECT
```

```
                    0211  *
                    0212  *  INITIALIZE  IB
                    0213  *
0074R 0049          0214  INITIB   STSP  (=SFINITIB)
0075R D025
0076R 804C          0215           JUMP  (=RETURN)
0077R 0015R
                    0216  *
                    0217  * INITIALIZE FIFO
0078R 0049          0218  INITFIFO STSP  (=SFINFIFO)
0079R D024
007AR 804C          0219           JUMP  (=RETURN)
007BR 0015R
                    0220  *
                    0221  *  INITIALIZE TC
                    0222  *
007CR 0049          0223  INITTC   STSP  (=SFTCINIT)
007DR D007
007ER 804C          0224           JUMP  (=RETURN)
007FR 0015R
                    0225  *
                    0226  *  CHECK  IB STATUS
                    0227  *          ARG1  =  MASK
                    0228  *          ARG2  =  EXPECTED STATUS WORD AFTER MASKING
                    0229  *
0080R 104D          0230  CKIBSTAT LDSE  (=SFIBIR)   RD STATUS
0081R D02B
0082R 004D          0231           STSE  (=IBSTATUS)
0083R 005A
0084R B04C          0232           JSUB  (=GETARG)   1ST  ARG
0085R 0017R
0086R 5825          0233           ANDF  A           MASK STATUS
0087R 004D          0234           STSE  (=ACTUAL)
0088R 0056
0089R B04C          0235           JSUB  (=GETARG)   2ND ARG
008AR 0017R
008BR 004C          0236           STSA  (=EXPECT)
008CR 0057
008DR D82C          0237           CSEA  E           COMPARE
008ER 8602          0238           JUMP  CKIBST1
008FR 804C          0239           JUMP  (=RETURN)   PASS
0090R 0015R
                    0240  CKIBST1  ERROR    1        FAIL
0091R 804C                 JUMP      (=FRP1)
0092R 0028R
                           ENDM
                    0241  *
                    0242  *  CHECK TC STATUS
                    0243  *          ARG1  =  MASK
                    0244  *          ARG2  =  EXPECTED STATUS WORD AFTER MASKING
                    0245  *
0093R 104D          0246  CKTCSTAT LDSE  (=SKTCSTAT) RD STATUS
0094R D002
0095R 004D          0247           STSE  (=TCSTATUS)
```

```
0096R 005A
0097R B04C    0248            JSUB  (=GETARG)
0098R 0017R
0099R 5825    0249            ANDE  A             MASK
009AR 004D    0250            STSF  (=ACTUAL)
009BR 0056
009CR B04C    0251            JSUB  (=GETARG)
009DR 0017R
009ER 004C    0252            STSA  (=EXPECT)
009FR 0057
00A0R D82C    0253            CSEA  E             COMPARE
00A1R 8602    0254            JUMP  CKTCST1
00A2R B04C    0255            JUMP  (=RETURN)     PASS
00A3R 0015R
              0256  CKTCST1   ERROR     2         FAIL
00A4R B04C                      JUMP      (=ERR1)
00A5R 0028R
                                ENDM
              0257  *
              0258  *   SET  BPDW PROCESSING FLAG  -  TC COMMAND
              0259  *
00A6R 0049    0260  SETBPDW   STSP  (=SFTCBPDE)
00A7R D009
00A8R B04C    0261            JUMP  (=RETURN)
00A9R 0015R
              0262  *
              0263  *  SET  UPDW FLAG    -  TC COMMAND
              0264  *
00AAR 0049    0265  SETUPDW   STSP  (=SKEUPDW)
00ABR D00B
00ACR B04C    0266            JUMP  (=RETURN)
00ADR 0015R
              0267  *
              0268  *  RESET 8M FORMATTER FLAG  -  TC COMMAND
              0269  *
00AER 0049    0270  CLR8MFMT STSP  (=SFTCBUFD)
00AFR D00C
00B0R B04C    0271            JUMP  (=RETURN)
00B1R 0015R
              0272  *
              0273  *   SET  TC  RUN  FLAG
              0274  *
00B2R 0049    0275  SETTCRUN STSP  (=SFTCRUN)
00B3R D00E
00B4R B04C    0276            JUMP  (=RETURN)
00B5R 0015R
              0277  *
              0278  *   RESET  BPDW  PROCESSING FLAG
              0279  *
00B6R 0049    0280  CLRBPDW   STSP  (=SFTCBPDD)
00B7R D008
00B8R B04C    0281            JUMP  (=RETURN)
00B9R 0015R
              0282  *
```

```
                    0283  *    SET  BM FORMATTER FLAG
                    0284  *
00AR 0049           0285  SETBMFMT STSP  (=SFTCBUFE)
00BR D000
00CR 804C           0286           JUMP  (=RETURN)
00DR 0015R
                    0287  *
                    0288  *    LOAD  TC  DATA BUFFER REGISTERS
                    0289  *          ARG1  =  POINTER  TO 8-WORD BUFFER
                    0290  *
00ER 1085           0291  LOADTCDB LDSX  =SKTCDB      PTR TO TC DB
00FR C400
00ER 804C           0292           JSUB  (=GETARG)   1ST ARG
01R 0017R
02R 1022            0293           LDSB  A           PTR TO DATA TO BE LOADED
03R 108D            0294           LDSE  =8
04R 0008
05R 1094            0295  LOADTC1  LDSA  B*          MOVE 8 WORDS
06R 009C            0296           STSA  X*
07R C82C            0297           DSEZ  E
08R 86FC            0298           JUMP  LOADTC1
09R 804C            0299           JUMP  (=RETURN)
0AR 0015R
                    0300  *
                    0301  *    WRITE TRACK FILE (INCLUDES TC CONTROL STATUS LK)
                    0302  *          ARG1   =  TRACK NO.
                    0303  *
0BR 804C            0304  WRTRACK  JSUB  (=GETARG)   GET TRK NO.
0CR 0017R
0DR 004C            0305           STSA  (=TRACK)
0ER 0053
0FR 608C            0306           IORA  =SKWRTF
10R 4800
11R 004C            0307  WRTRAC0  STSA  (=SKTCIR)   WRITE TRACK
12R D000
13R 860F            0308           JUMP  WRTRAC1
14R 004C            0309           STSA  (=TCIR)
15R 0059
16R 108C            0310           LDSA  =WAITCT
17R 2710
18R 804C            0311           JSUB  (=WAIT)     WAIT AT LEAST  10US
19R 001CR
1AR 104C            0312           LDSA  (=SKTCSTAT)  BEFORE CHECKING STATUS
1BR D002
1CR 004C            0313           STSA  (=TCSTATUS)
1DR 005A
1ER E08C            0314           ASZA  =%4000
1FR 4000
20R 8602            0315           JUMP  WRTRAC1     NG
21R 804C            0316           JUMP  (=RETURN)   OK
22R 0015R
                    0317  WRTRAC1  ERROR     3
23R 804C                            JUMP      (=ERR1)
24R 0028R
```

```
                                        ENDM
                    0318  *
                    0319  *  READ TRACK FILE (INCLUDES TC CONTROL STATUS CK)
                    0320  *            ARG1  = TRACK NO.
                    0321  *
 00E5R B04C         0322  RDTRACK  JSUB  (=GETARG)   GET TRACK NO.
 00E6R 0017R
 00E7R 004C         0323          STSA  (=TRACK)
 00E8R 0053
 00E9R 608C         0324          IORA  =SKRDTF
 00EAR 5400
 00EBR 86E5         0325          JUMP  WRTRAC0     SET COMMAND, CK STATUS
                    0326  *
                    0327  *  CHECK CONTENTS OF TC DATA BUFFER
                    0328  *            ARG1  =  PTR TO 8-WORD BUFFER OF EXPECTED DA
                    0329  *
 00ECR 108B         0330  CKTCDB   LDSX  =SKTCDB     PTR TO TC DB
 00EDR C400
 00EER B04C         0331          JSUB  (=GETARG)
 00EFR 0017R
 00F0R 1022         0332          LDSB  A             PTR TO EXPECTED DATA
 00F1R 108D         0333          LDSE  =8
 00F2R 0008
 00F3R 109C         0334  CKTCDB1  LDSA  X*            COMPARE 8 WORDS
 00F4R D894         0335          CSEA  B*
 00F5R 8604         0336          JUMP  CKTCDB2       ERR
 00F6R C82C         0337          DSEZ  E
 00F7R 86FB         0338          JUMP  CKTCDB1       CONTINUE
 00F8R B04C         0339          JUMP  (=RETURN)     DONE
 00F9R 0015R
 00FAR 10DC         0340  CKTCDB2  LDSA  *X
 00FBR 004C         0341          STSA  (=ACTUAL)
 00FCR 0056
 00FDR 10D4         0342          LDSA  *B
 00FER 004C         0343          STSA  (=EXPECT)
 00FFR 0057
 0100R 004D         0344          STSE  (=INDEX)
 0101R 0058
                    0345          ERROR    4
 0102R B04C                        JUMP       (=ERR1)
 0103R 0028R
                                    ENDM
                    0346  *
                    0347  *  READ COARSE SEARCH MEMORY  (CSM)
                    0348  *            ARG1  = TRACK NO.
                    0349  *
 0104R B04C         0350  RDCSM    JSUB  (=GETARG)   GET TRK NO.
 0105R 0017R
 0106R 004C         0351          STSA  (=TRACK)
 0107R 0053
 0108R 608C         0352          IORA  =%7000
 0109R 7000
 010AR B04C         0353          JUMP  (=WRTRAC0)  SET COMMAND, CK STATUS
 010BR 00D1R
```

```
                    0354  *
                    0355  *   VERIFY CONTENTS OF CSM (CK TC DB REG 0 AND REG 1)
                    0356  *          ARG1 = PTR TO 2 WORD BUFFER OF EXPECTED
                    0357  *                 DATA
                    0358  *
0010R 108B          0359  CKCSM   LDSX  =SKTCDB      PTR TO TC DB
0010R C400
0010R B04C          0360          JSUB  (=GETARG)    PTR TO EXPECTED DATA
0010R 0017R
0110R 18A4          0361          LDDA  A*           GET EXPECTED
0111R D89C          0362          CSEA  X*           CK DBR 0
0112R 8604          0363          JUMP  CKCSM1
0113R D89D          0364          CSEE  X*           CK DBR 1
0114R 8605          0365          JUMP  CKCSM2
0115R 804C          0366          JUMP  (=RETURN)    PASS
0116R 0015R
0117R 004C          0367  CKCSM1  STSA  (=EXPECT)
0118R 0057
0119R 8602          0368          JUMP  CKCSM3
011AR 004D          0369  CKCSM2  STSE  (=EXPECT)
011BR 0057
011CR 10DC          0370  CKCSM3  LDSA  *X
011DR 004C          0371          STSA  (=ACTUAL)
011ER 0056
                    0372          ERROR   5
011FR 804C                        JUMP      (=ERR1)
0120R 0028R
                                  ENDM
                    0373  *
                    0374  *   SET IB RUN MODE
                    0375  *
0121R 0049          0376  SETIBRUN STSP  (=SFRUNIB)
0122R D02A
0123R 804C          0377          JUMP  (=RETURN)
0124R 0015R
                    0378  *
                    0379  *   LOAD  IB DATA BUFFER
                    0380  *          ARG1  = PTR TO 4 WORD DATA BUFFER
                    0381  *
0125R 108B          0382  LOADIBDB LDSX  =SKIBDB     PTR TO IB DB
0126R D02C
0127R B04C          0383          JSUB  (=GETARG)
0128R 0017R
0129R 1022          0384          LDSB  A            PTR TO DATA TO BE LOADED
012AR 108D          0385          LDSE  =4
012BR 0004
012CR 1094          0386  LOADIB1  LDSA  B*           MOVE 4 WORDS
012DR 009C          0387          STSA  X*
012ER C82C          0388          DSEZ  E
012FR 86FC          0389          JUMP  LOADIB1
0130R 804C          0390          JUMP  (=RETURN)
0131R 0015R
                    0391  *
                    0392  *  WRITE FREQ DATA IN IB DBR 0 INTO CAM FILE
```

```
                    0393  *          ARG1  =  CAM FILE NO.
                    0394  *
0132R B04C          0395  WRIBFREQ JSUB  (=GETARG)   GET CFN
0133R 0017R
0134R 608C          0396          IORA  =%28
0135R 0028
0136R F08C          0397  WRIBF1  RSPA  =10
0137R 000A
0138R 004C          0398          STSA  (=SFIBIR)
0139R D02B
013AR 004C          0399          STSA  (=IBIR)
013BR 0059
013CR 804C          0400          JUMP  (=RETURN)
013DR 0015R
                    0401  *
                    0402  *  WRITE VALID AND AZIMUTH DATA IN IB DBR1 INTO CAM FIL
                    0403  *          ARG1  =  CAM FILE NO.
                    0404  *
013ER B04C          0405  WRIBVAZ JSUB  (=GETARG)   GET CFN
013FR 0017R
0140R 608C          0406          IORA  =%20
0141R 0020
0142R 86F3          0407          JUMP  WRIBF1
                    0408  *
                    0409  *  WRITE REDUCTION FACTOR IN IB DBR3 INTO CAM FILE
                    0410  *          ARG1  = CAM FILE NO.
                    0411  *
0143R B04C          0412  WRIBRF  JSUB  (=GETARG)
0144R 0017R
0145R 608C          0413          IORA  =%18
0146R 0018
0147R 86EE          0414          JUMP  WRIBF1
                    0415  *
                    0416  *  ISSUE PROCESS SPDW COMMAND TO IB
                    0417  *
0148R 108C          0418  IBSPDW  LDSA  =%C000
0149R C000
014AR 004C          0419          STSA  (=SFIBIR)
014BR D02B
014CR 004C          0420          STSA  (=IBIR)
014DR 0059
014ER 804C          0421          JUMP  (=RETURN)
014FR 0015R
                    0422  *
                    0423  *  ISSUE READ BPDW COMMAND  TO TC
                    0424  *
0150R 108C          0425  TCRDBPDW LDSA  =%8000
0151R 8000
0152R 804C          0426          JUMP  (=WRTRACM)  ISSUE  COMMAND, CK STATUS
0153R 00D1R
                    0427  *
                    0428  *  ISSUE FLUSH BPDW COMMAND  TO TC
                    0429  *
0154R 108C          0430  TCFLSHBP LDSA  =%8800
```

```
0155R 8800
0156R 804C   0431            JUMP   (=WRTRAC0)  ISSUE CMND, CK STATUS
0157R 00D1R
             0432  *
             0433  *  ISSUE PROCESS BPDW COMMAND TO TC AND CHECK STATUS
             0434  *       ARG1  =  COUNT OF NO. OF  PROCESS BPDW
             0435  *                CMNDS TO BE ISSUED
             0436  *       ARG2  =  STATUS MASK
             0437  *       ARG3  =  EXPECTED STATUS AFTER MASKING
             0438  *
0158R B04C   0439  TCPBPDW JSUB   (=GETARG)    GET COUNT
0159R 0017R
015AR 1025   0440            LDSE   A
015BR B04C   0441            JSUB   (=GETARG)
015CR 0017R
015DR 001C   0442            STSA   X           SAVE MASK
015ER B04C   0443            JSUB   (=GETARG)
015FR 0017R
0160R 0014   0444            STSA   B           SAVE EXPECTED STATUS
0161R 004C   0445            STSA   (=EXPECT)
0162R 0057
0163R 004D   0446  TCPBP1    STSE   (=INDEX)
0164R 0058
0165R 108C   0447            LDSA   =%8A00
0166R 8A00
0167R 004C   0448            STSA   (=SKTCIR)   ISSUE CMND
0168R D000
0169R 8616   0449            JUMP   TCPBP2
016AR 004C   0450            STSA   (=TCIR)
016BR 0059
016CR 108C   0451            LDSA   =WAITCT
016DR 2710
016ER B04C   0452            JSUB   (=WAIT)     WAIT AT LEAST 10US
016FR 001CR
0170R 104C   0453            LDSA   (=SKTCSTAT)
0171R D002
0172R 004C   0454            STSA   (=TCSTATUS)
0173R 005A
0174R E08C   0455            ASZA   =%4000
0175R 4000
0176R 8609   0456            JUMP   TCPBP2      NOT READY
0177R 581C   0457            ANDA   X           APPLY MASK
0178R 004C   0458            STSA   (=ACTUAL)
0179R 0056
017AR D814   0459            CSEA   B           CK VS EXPECTED DATA
017BR 8604   0460            JUMP   TCPBP2      NG
017CR C82C   0461            DSEZ   E
017DR 86E5   0462            JUMP   TCPBP1      CONTINUE
017ER 804C   0463            JUMP   (=RETURN)   PASS
017FR 0015R
             0464  TCPBP2    ERROR     6
0180R 804C                   JUMP      (=ERR1)
0181R 0028R
                             ENDM
```

```
                    0465  *
                    0466  *  READ  VALID, AZIMUTH, AND FREQUENCY FROM CAM FILE
                    0467  *          ARG1  =  CAM FILE NO.
                    0468  *          ARG2  =  EXPECTED CONTENTS
                    0469  *
 0182R D030         0470  RDIBP1    DC     SFRDVAZ
 0183R D038         0471  RDIBP2    DC     SFRDRF
 0184R B04C         0472  RDIBVAF   JSUB   (=GETARG)
 0185R 0017R
 0186R 004C         0473            STSA   (=INDEX)
 0187R 0058
 0188R 1023         0474            LDSX   A              GET CFN
 0189R B04C         0475            JSUB   (=GETARG)
 018AR 0017R
 018BR 004C         0476            STSA   (=EXPECT)
 018CR 0057
 018DR 1025         0477            LDSE   A              GET EXPECTED ANS
 018ER 12F3         0478            LDSA   (RDIBP1),X     RD
 018FR 004C         0479            STSA   (=ACTUAL)
 0190R 0056
 0191R D82C         0480            CSEA   E
 0192R 8602         0481            JUMP   RDIBVAF1       NE
 0193R B04C         0482            JUMP   (=RETURN)      OK
 0194R 0015R
                    0483  RDIBVAF1  ERROR    7
 0195R B04C                         JUMP       (=ERR1)
 0196R 0028R
                                    ENDM
                    0484  *
                    0485  *   READ REDUCTION FACTOR FROM  CAM FILE
                    0486  *          ARG1  =  CAM FILE NO.
                    0487  *          ARG2  =  EXPECTED CONTENTS
                    0488  *
 0197R B04C         0489  RDIBRF    JSUB   (=GETARG)
 0198R 0017R
 0199R 004C         0490            STSA   (=INDEX)
 019AR 0058
 019BR 1023         0491            LDSX   A              GET CFN
 019CR B04C         0492            JSUB   (=GETARG)
 019DR 0017R
 019ER 004C         0493            STSA   (=EXPECT)
 019FR 0057
 01A0R 1025         0494            LDSE   A              GET EXPECTED ANS
 01A1R 12E1         0495            LDSA   (RDIBP2),X     RD
 01A2R 588C         0496            ANDA   =%F000
 01A3R F000
 01A4R 004C         0497            STSA   (=ACTUAL)
 01A5R 0056
 01A6R D82C         0498            CSEA   E
 01A7R 8602         0499            JUMP   RDIBRF1        NE
 01A8R B04C         0500            JUMP   (=RETURN)      OK
 01A9R 0015R
                    0501  RDIBRF1   ERROR      8
 01AAR B04C                         JUMP       (=ERR1)
```

```
01ABR 0028R
                                        ENDM
                    0502  *
                    0503  *   CLEAR ALL  TRACKS IN TDM
                    0504  *
01ACR 681B          0505  INITTDM  XORX  X
01ADR 6812          0506           XORB  B
01AER 101C          0507  INITTD1  LDSA  X
01AFR 004C          0508           STSA  (=TRACK)
01B0R 0053
01B1R 004A          0509           STSB  (=SKTCDB+7)   CLR VALID BIT IN TC DBR 7
01B2R C407
01B3R 608C          0510           IORA  =SKWRTF
01B4R 4800
01B5R 004C          0511           STSA  (=SKTCIR)
01B6R D000
01B7R 8613          0512           JUMP  INITTD2
01B8R 004C          0513           STSA  (=TCIR)
01B9R 0059
01BAR 108C          0514           LDSA  =WAITCT
01BBR 2710
01BCR B04C          0515           JSUB  (=WAIT)       WAIT AT LEAST 10US
01BDR 001CR
01BER 104C          0516           LDSA  (=SKTCSTAT)   BEFORE CHECKING STATUS
01BFR D002
01C0R 004C          0517           STSA  (=TCSTATUS)
01C1R 005A
01C2R E08C          0518           ASZA  =%4000
01C3R 4000
01C4R 8606          0519           JUMP  INITTD2       NG
01C5R C01C          0520           ISEZ  X             NEVER SKIPS
01C6R D88B          0521           CSEX  =128
01C7R 0080
01C8R 86E5          0522           JUMP  INITTD1       DO NEXT TRACK
01C9R 804C          0523           JUMP  (=RETURN)
01CAR 0015R
                    0524  INITTD2  ERROR    9
01CBR B04C                          JUMP      (=ERR1)
01CCR 0028R
                                        ENDM
                    0525  *
                    0526  *   CLEAR ALL IB  CAM  FILES
                    0527  *
01CDR 108A          0528  INITIBCF LDSB  =8           CLR 8 CAM FILES
01CER 0008
01CFR 108D          0529           LDSE  =7
01D0R 0007
01D1R 6824          0530  INITIB1  XORA  A
01D2R 004C          0531           STSA  (=SKIBDB+1)
01D3R D02D
01D4R 108C          0532           LDSA  =%20
01D5R 0020
01D6R 602C          0533           IORA  E
01D7R F08C          0534           RSPA  =10
```

```
01D8R 000A
01D9R 004C     0535            STSA  (=SFIRIR)
01DAR D02B
01DBR 004C     0536            STSA  (=IRIR)
01DCR 0059
01DDR C82C     0537            DSEZ  E
01DER 0000     0538            NOP
01DFR C814     0539            DSEZ  B
01E0R 86F0     0540            JUMP  INITIB1
01E1R 804C     0541            JUMP  (=RETURN)
01E2R 0015R
               0542  *
               0543  *  ISSUE  INTERROGATE CSM COMMAND TO TC
               0544  *
01E3R 108C     0545  INTGTCSM LDSA  =%9E00
01E4R 9E00
01E5R 804C     0546            JUMP  (=WRTRAC0)
01E6R 00D1R
               0547  *
               0548  *  ISSUE  READ MATCH ADDRESS REGISTER COMMAND TO TC
               0549  *
01E7R 108C     0550  RDTCMAR  LDSA  =%A600
01E8R A600
01E9R 804C     0551            JUMP  (=WRTRAC0)
01EAR 00D1R
               0552  *
               0553  *    VERIFY CONTENTS OF TC  IR
               0554  *           ARG1   =   MASK
               0555  *           ARG2   =   EXPECTED IR CONTENTS AFTER MASKI
               0556  *
01EBR 104D     0557  CKTCIR   LDSE  (=SKTCIR)
01ECR D000
01EDR 704D     0558            STSE  (=TCIR)
01EER 0059
01EFR B04C     0559            JSUB  (=GETARG)
01F0R 0017R
01F1R 5825     0560            ANDF  A             MASK
01F2R 004D     0561            STSE  (=ACTUAL)
01F3R 0056
01F4R B04C     0562            JSUB  (=GETARG)
01F5R 0017R
01F6R 004C     0563            STSA  (=EXPECT)
01F7R 0057
01F8R D82C     0564            CSEA  E             COMPARE
01F9R 8602     0565            JUMP  CKTCIR1
01FAR 804C     0566            JUMP  (=RETURN)     PASS
01FBR 0015R
               0567  CKTCIR1  ERROP    10         FAIL
01FCR 804C                     JUMP       (=ERR1)
01FDR 0028R
                               ENDM
               0568  *
               0569  *   ISSUE  LOAD  SYNTHETIC PDW  COMMAND TO TC
               0570  *
```

```
01FER 108C   0571 LDTCSPDW LDSA  =%8000
01FFR 8000
0200R 804C   0572          JUMP  (=WRTRAC0)
0201R 00D1R
                0573 *
                0574 *   ISSUE RESET FSU  COMMAND TO TC
                0575 *
0202R 108C   0576 RESETFSU LDSA  =%8800
0203R 8800
0204R 804C   0577          JUMP  (=WRTRAC0)
0205R 00D1R
                0578 *
                0579 *   ISSUE PROCESS SYNTHETIC TRACK FILE COMMAND TO TC
                0580 *          ARG1   =  TRACK NO. TO BE ASSUMED BY STF
                0581 *
0206R B04C   0582 TCPSTF   JSUB  (=GETARG)
0207R 0017R
0208R 004C   0583          STSA  (=TRACK)
0209R 0053
020AR 608C   0584          IORA  =%A800
020BR A800
020CR 804C   0585          JUMP  (=WRTRAC0)
020DR 00D1R
                0586 *
                0587 *  ISSUE  READ  FSU UPDATE REGISTERS  COMMAND TO TC
                0588 *
020ER 108C   0589 RDFSUUR  LDSA  =%B400
020FR B400
0210R 804C   0590          JUMP  (=WRTRAC0)
0211R 00D1R
                0591 *
                0592 *  LOAD  TC INTERRUPT STATUS WORD
                0593 *          ARG1   =  DATA TO BE LOADED
                0594 *
0212R B04C   0595 LDTCISW  JSUB  (=GETARG)
0213R 0017R
0214R 004C   0596          STSA  (=SKTCISW)
0215R D001
0216R 004C   0597          STSA  (=TCISW)
0217R 005B
0218R 804C   0598          JUMP  (=RETURN)
0219R 0015R
                0599 *
                0600 *   READ AND VERIFY TC ISW
                0601 *             ARG1   =  MASK
                0602 *             ARG2   =  EXPECTED CONTENTS AFTER MASKING
                0603 *
021AR B04C   0604 CKTCISW  JSUB  (=GETARG)
021BR 0017R
021CR 104A   0605          LDSB  (=SKTCISW)  RD
021DR D001
021ER 004A   0606          STSB  (=TCISW)
021FR 005B
0220R 5822   0607          ANDR  A           MASK
```

```
0221R 004A    0608            STSB  (=ACTUAL)
0222R 0056
0223R B04C    0609            JSUB  (=GETARG)
0224R 0017R
0225R 004C    0610            STSA  (=EXPECT)
0226R 0057
0227R D822    0611            CSEB  A              COMPARE
0228R B802    0612            JUMP  CKTCISW1       NG
0229R B04C    0613            JUMP  (=RETURN)      OK
022AR 0015R
              0614  CKTCISW1  ERROR   11
022BR B04C                     JUMP      (=ERR1)
022CR 0028R
                               ENDM
              0615  *
              0616  *  ENABLE BUS HUNG INTERRUPT
              0617  *
      022DR   0618  ENBBHUNG  EQU   #
022DR 108C    0619            LDSA  =BHRUPT
022ER 004ER
022FR 004C    0620            STSA  (='700)        SET TRAP ADDR
0230R 01C0
0231R 6824    0621            XORA  A
0232R 004C    0622            STSA  (=SFPINMSK)
0233R FEFF
0234R 108C    0623            LDSA  =9             ENB  VIA TC
0235R 0009
0236R 004C    0624            STSA  (=SKTCISW)
0237R D001
0238R 004C    0625            STSA  (=TCISW)
0239R 005B
023AR B807    0626            EHII
023BR B806    0627            ELOI
023CR 804C    0628            JUMP  (=RETURN)
023DR 0015R
              0629  *
              0630  *   GENERATE TEST BUS HUNG INTERRUPT
              0631  *
023ER B805    0632  CKBHRUPT  DLOI
023FR 108C    0633             LDSA  =1
0240R 0001
0241R 004C    0634            STSA  (=BHTEST)
0242R 0002R
0243R B806    0635            ELOI
0244R 104C    0636            LDSA  (=SFINITIB)  HANG THE BUS
0245R D025
0246R 0000    0637            NOP                ALLOW BUS TO HANG
0247R 0000    0638            NOP
0248R 0000    0639            NOP
0249R 0000    0640            NOP
024AR 6824    0641            XORA  A
024BR 304C    0642            SWPA  (=BHTEST)    CLR TEST FLAG
024CR 0002R
024DR D88C    0643            CSEA  =2
```

```
024ER 0002
024FR 8602   0644            JUMP  CKBHRU1     FAIL
0250R 804C   0645            JUMP  (=RETURN)   PASS
0251R 0015R
                0646  CKBHRU1 ERROR  12
0252R 804C                     JUMP      (=ERR1)
0253R 0028R
                               ENDM
                0648  *
                0649  *  LOAD TC INSTRUCTION REGISTER
                0650  *       ARG1  =  DATA TO BE LOADED
                0651  *
          0254R 0652  LOADTCIR EQU   *
0254R 804C      0653            JSUB  (=GETARG)
0255R 0017R
0256R 804C      0654            JUMP  (=WRTRAC0)
0257R 00D1R
                0655  *
                0656  *     NOP  ROUTINE
                0657  *
0258R 804C      0658  NOPROUT  JUMP  (=RETURN)
0259R 0015R
                0659  *
                0660  *     END OF TEST PROGRAM ROUTINE
                0661  *
          025AR 0662  EOTEST  EQU   *
025AR 104C      0663            LDSA  (=SBMSGLO)
025BR 0051
025CR 96FD      0664            JNGA  *-2
025DR 108C      0665            LDSA  =%9300
025ER 9300
025FR 004C      0666            STSA  (=SBMSGLO+1)
0260R 0052
0261R 108C      0667            LDSA  =-1
0262R FFFF
0263R 108A      0668            LDSB  =TRACK
0264R 0053
0265R 108D      0669            LDSE  =14
0266R 000E
0267R 0094      0670  EOT1      STSA  B*
0268R C82C      0671            DSEZ  E
0269R 86FD      0672            JUMP  EOT1
026AR 108C      0673            LDSA  =%8002
026BR 8002
026CR 004C      0674            STSA  (=SBMSGLO)
026DR 0051
026ER 8800      0675            HALT
                0676  *
                0677  *   INCREMENT TEST NO.
                0678  *
026FR C04C      0679  TEST.... ISEZ   (=TESTNO)
0270R 0003R
0271R 804C      0680            JUMP  (=RETURN)
0272R 0015R
```

```
                    0681  *
                    0682  *  INCREMENT UNIT NO.
                    0683  *     (DESTINED FOR BITS 6-1 OF ERR MSG)
                    0684  *
 0273R C04C         0685  UNIT.... ISEZ   (=UNITNO)
 0274R 0004R
 0275R C04C         0686           ISEZ   (=UNITNO)
 0276R 0004R
 0277R 6824         0687           XORA   A
 0278R 108D         0688           LDSE   =8
 0279R 0008
 027AR 108A         0689           LDSB   =CMND
 027BR 0059
 027CR 0094         0690  UNIT1    STSA   B*          CLR LAST 8 WDS OF MSG BUFF
 027DR C82C         0691           DSEZ   F
 027ER 86FD         0692           JUMP   UNIT1
 027FR 804C         0693           JUMP   (=RETURN)
 0280R 0015R
                    0694           LIST   EJECT
```

```
                    0695  *
                    0696  *   CHECKOUT OF  INPUT BUFFER
                    0697  *
        0281R       0698  SORTTEST EQU   #                    1
0281R   0273R       0699          DC     UNIT....
0282R   022DR       0700          DC     ENBBHUNG
0283R   0074R       0701          DC     INITIB                        2
0284R   0078R       0702          DC     INITFIFO
0285R   007CR       0703          DC     INITTC                        3
0286R   0212R       0704          DC     LDTCISW,9                     ENB BUS HUNG
0287R   0009        0704
0288R   026FR       0705          DC     TEST....                    1
0289R   021AR       0706          DC     CKTCISW
028AR   8000        0707          DC     %8000,%8000
028BR   8000        0707
028CR   026FR       0708          DC     TEST....                    2
028DR   023ER       0709          DC     CKBHRUPT                      GEN TEST BUS HUN
028ER   026FR       0710          DC     TEST...3.
028FR   0080R       0711          DC     CKIBSTAT                      4
0290R   ~~0004~~ 7  0712          DC     7,Ø
0291R   ~~0007~~ Ø  0712
0292R   026FR       0713          DC     TEST...4.
0293R   0093R       0714          DC     CKTCSTAT                      5
0294R   F0F8        0715          DC     %F0F8,%78
0295R   0078        0715
0296R   00A6R       0716          DC     SETBPDW                       6
0297R   00AAR       0717          DC     SETUPDW                       7
0298R   00AER       0718          DC     CLRBMFMT                      8
0299R   00B2R       0719          DC     SETTCRUN                      9
029AR   026FR       0720          DC     TEST...5.
029BR   0093R       0721          DC     CKTCSTAT
029CR   F0F8        0722          DC     %F0F8,%A0B8    10
029DR   A0B8        0722
029ER   00B6R       0723          DC     CLRBPDW                       11
029FR   00BAR       0724          DC     SETBMFMT                      12
02A0R   026FR       0725          DC     TEST...6.
02A1R   01ACR       0726          DC     INITTDM                       12A
                    0727          GENTRK 31                            13-19
02A2R   00BER                       DC       LOADTCDB
02A3R   0396R                       DC       TF31
02A4R   026FR                       DC       TEST...7..
02A5R   00CBR                       DC       WRTRACK
02A6R   001F                        DC       31
02A7R   00BER                       DC       LOADTCDB,TFNULL
02A8R   03B6R
02A9R   026FR                       DC       TEST...8..
02AAR   00E5R                       DC       RDTRACK
02ABR   001F                        DC       31                        9
02ACR   026FR                       DC       TEST...9..
02ADR   00ECR                       DC       CKTCDB,TF31
02AER   0396R
02AFR   026FR                       DC       TEST...A..
02B0R   0104R                       DC       RDCSM
02B1R   001F                        DC       31
```

```
02B2R 026FR                    DC      TEST....B
02B3R 010CR                    DC      CKCSM,TFCS31
02B4R 03D6R
                               ENDM
                0728           GENTRK  32                              20-21
02B5R 00BER                    DC      LOADTCDB
02B6R 039ER                    DC      TF32
02B7R 026FR                    DC      TEST....C
02B8R 00CBR                    DC      WRTRACK
02B9R 0020                     DC      32
02BAR 00BER                    DC      LOADTCDB,TFNULL
02BBR 03B6R
02BCR 026FR                    DC      TEST....D
02BDR 00E5R                    DC      RDTRACK
02BER 0020                     DC      32
02BFR 026FR                    DC      TEST....E
02C0R 00ECR                    DC      CKTCDB,TF32
02C1R 039ER
02C2R 026FR                    DC      TEST....F
02C3R 0104R                    DC      RDCSM
02C4R 0020                     DC      32
02C5R 026FR                    DC      TEST....10
02C6R 010CR                    DC      CKCSM,TFCS32
02C7R 03DER
                               ENDM
                0729           GENTRK  85                              22-23
02C8R 00BER                    DC      LOADTCDB
02C9R 03A6R                    DC      TF85
02CAR 026FR                    DC      TEST....11
02CBR 00CBR                    DC      WRTRACK
02CCR 0055                     DC      85
02CDR 00BER                    DC      LOADTCDB,TFNULL
02CER 03B6R
02CFR 026FR                    DC      TEST....12
02D0R 00E5R                    DC      RDTRACK
02D1R 0055                     DC      85
02D2R 026FR                    DC      TEST....13
02D3R 00ECR                    DC      CKTCDB,TF85
02D4R 03A6R
02D5R 026FR                    DC      TEST....14
02D6R 0104R                    DC      RDCSM
02D7R 0055                     DC      85
02D8R 026FR                    DC      TEST....15
02D9R 010CR                    DC      CKCSM,TFCS85
02DAR 03E6R
                               ENDM
                0730           GENTRK  106                             24-25
02DBR 00BER                    DC      LOADTCDB
02DCR 03AER                    DC      TF106
02DDR 026FR                    DC      TEST....16
02DER 00CBR                    DC      WRTRACK
02DFR 006A                     DC      106
02E0R 00BER                    DC      LOADTCDB,TFNULL
02E1R 03B6R
```

```
02E2R 026FR                    DC      TEST....17
02E3R 00E5R                    DC      RDTRACK
02E4R 006A                     DC      106
02E5R 026FR                    DC      TEST....18
02E6R 00ECR                    DC      CKTCDB,TF106
02E7R 03AER
02E8R 026FR                    DC      TEST....19
02E9R 0104R                    DC      RDCSM
02EAR 006A                     DC      106
02EBR 026FR                    DC      TEST....1A
02ECR 010CR                    DC      CKCSM,TFCS106
02EDR 03EER
                               ENDM
02EER 01CDR  0731              DC      INITIBCF                25A
02EFR 0121R  0732              DC      SETIBRUN                26
02F0R 026FR  0733              DC      TEST....1B
02F1R 0080R  0734              DC      CKIBSTAT                27
02F2R ~~0001~~ 7  0735         DC      ~~1,7~~ 7,1
02F3R ~~0071~~ 1  0735
02F4R 0125R  0736              DC      LOADIBDB                28-30
02F5R 03BER  0737              DC      CF1
02F6R 0132R  0738              DC      WRIBFREQ,7              31
02F7R 0007   0738
02F8R 013ER  0739              DC      WRIBVAZ,7               32
02F9R 0007   0739
02FAR 0143R  0740              DC      WRIBRF,7                33
02FBR 0007   0740
02FCR 0125R  0741              DC      LOADIBDB
02FDR 03BAR  0742              DC      PDWNULL
02FER 026FR  0743              DC      TEST....1C
02FFR 0184R  0744              DC      RDIBVAF,7,%A7FF         34
0300R 0007   0744
0301R A7FF   0744
0302R 026FR  0745              DC      TEST....1D
0303R 0197R  0746              DC      RDIBRF,7,0              34
0304R 0007   0746
0305R 0000   0746
0306R 0125R  0747              DC      LOADIBDB,PDW1           35
0307R 0392R  0747
0308R 026FR  0748              DC      TEST....1E
0309R 0093R  0749              DC      CKTCSTAT                36
030AR 1000   0750              DC      %1000,0
030BR 0000   0750
030CR 0148R  0751              DC      IBSPDW                  37
030DR 026FR  0752              DC      TEST....1F
030ER 0093R  0753              DC      CKTCSTAT                38
030FR 1000   0754              DC      %1000,%1000
0310R 1000   0754
0311R 00BER  0755              DC      LOADTCDB,TFNULL
0312R 03B6R  0755
0313R 026FR  0756              DC      TEST....20
0314R 0150R  0757              DC      TCRDBPDW                39
0315R 026FR  0758              DC      TEST....21
0316R 00ECR  0759              DC      CKTCDB                  40
```

```
0317R 03C2R  0760          DC    BPDW1
0318R 026FR  0761          DC    TEST.22
0319R 0154R  0762          DC    TCFLSHBP                    41
031AR 026FR  0763          DC    TEST.23
031BR 0093R  0764          DC    CKTCSTAT                    42
031CR 1000   0765          DC    %1000,0
031DR 0000   0765
031ER 0125R  0766          DC    LOADIBDB                    43
031FR 03CAR  0767          DC    CF2
0320R 0143R  0768          DC    WRIBRF,7                    44
0321R 0007   0768
0322R 0125R  0769          DC    LOADIBDB,PDW1               45
0323R 0392R  0769
0324R 026FR  0770          DC    TEST.24
0325R 0158R  0771          DC    TCPBPDW,240                 46
0326R 00F0   0771
0327R 1000   0772          DC    %1000,0
0328R 0000   0772
0329R 026FR  0773          DC    TEST.25
032AR 0158R  0774          DC    TCPBPDW,1                   47
032BR 0001   0774
032CR 1000   0775          DC    %1000,%1000
032DR 1000   0775
032ER 026FR  0776          DC    TEST.26
032FR 015AR  0777          DC    TCRDBPDW                    48
0330R 026FR  0778          DC    TEST.27
0331R 00ECR  0779          DC    CKTCDB                      48
0332R 03C2R  0780          DC    BPDW1
             0781  *
             0782  *   CHECKOUT   OF   CSM  INTERROGATE  AND
             0783  *        ADDRESS  GENERATION
             0784  *
0333R 0273R  0785          DC    UNIT.2
0334R 00BER  0786          DC    LOADTCDB                    49
0335R 03CER  0787          DC    REPDW1
0336R 026FR  0788          DC    TEST.28
0337R 01E3R  0789          DC    INTGTCSM                    50
0338R 026FR  0790          DC    TEST.29
0339R 01E7R  0791          DC    RDTCMAR                     51
033AR 026FR  0792          DC    TEST.2A
033BR 01EBR  0793          DC    CKTCIR                      52-53
033CR FFFF   0794          DC    -1,%A61F
033DR A61F   0794
033ER 026FR  0795          DC    TEST.2B
033FR 01E7R  0796          DC    RDTCMAR                     54
0340R 026FR  0797          DC    TEST.2C
0341R 01EBR  0798          DC    CKTCIR                      55-56
0342R FFFF   0799          DC    -1,%A620
0343R A620   0799
0344R 026FR  0800          DC    TEST.2D
0345R 01E7R  0801          DC    RDTCMAR                     57
0346R 026FR  0802          DC    TEST.2E
0347R 01EBR  0803          DC    CKTCIR                      58-59
0348R FFFF   0804          DC    -1,%A655
```

```
0349R A655    0804
                                                        2F
034AR 026FR   0805          DC      TEST....
034BR 01E7R   0806          DC      RDTCMAR                 60
                                                        30
034CR 026FR   0807          DC      TEST....
034DR 01EBR   0808          DC      CKTCIR                  61-62
034ER FFFF    0809          DC      -1,%A66A
034FR A66A    0809
                                                        31
0350R 026FR   0810          DC      TEST....
0351R 01E7R   0811          DC      RDTCMAR                 63
                                                        32
0352R 026FR   0812          DC      TEST....
0353R 01EBR   0813          DC      CKTCIR                  64-65
0354R FF80    0814          DC      %FF80,%A680
0355R A680    0814
              0815  *
              0816  *   CHECKOUT  OF  TC  FSU
              0817  *
0356R 00BER   0818          DC      LOADTCDB                66
0357R 03C2R   0819          DC      BPDW1
0358R 01FER   0820          DC      LDTCSPDW                67
              0821          CKFSU   31                      68-72
                                                        33
0359R 026FR                 DC        TEST....
035AR 0202R                 DC        RESETFSU
035BR 00BER                 DC        LOADTCDB,TF31
035CR 0396R
                                                        34
035DR 026FR                 DC        TEST....
035ER 0206R                 DC        TCPSTF
035FR 001F                  DC        31
0360R 00BER                 DC        LOADTCDB,TFNULL
0361R 03B6R
                                                        35
0362R 026FR                 DC        TEST....
0363R 020ER                 DC        RDFSUUR
                                                        36
0364R 026FR                 DC        TEST....
0365R 00ECR                 DC        CKTCDB,TFFS31
0366R 03F6R
                            ENDM
              0822          CKFSU   32                      73-77
                                                        37
0367R 026FR                 DC        TEST....
0368R 0202R                 DC        RESETFSU
0369R 00BER                 DC        LOADTCDB,TF32
036AR 039ER
                                                        38
036BR 026FR                 DC        TEST....
036CR 0206R                 DC        TCPSTF
036DR 0020                  DC        32
036ER 00BER                 DC        LOADTCDB,TFNULL
036FR 03B6R
                                                        39
0370R 026FR                 DC        TEST....
0371R 020ER                 DC        RDFSUUR
                                                        3A
0372R 026FR                 DC        TEST....
0373R 00ECR                 DC        CKTCDB,TFFS32
0374R 03FER
                            ENDM
              0823          CKFSU   85                      78-82
                                                        3B
0375R 026FR                 DC        TEST....
0376R 0202R                 DC        RESETFSU
```

```
0377R 00BER                          DC      LOADTCDB,TF85
0378R 03A6R
0379R 026FR                          DC      TEST.3C.
037AR 0206R                          DC      TCPSTF
037BR 0055                           DC      85
037CR 00BER                          DC      LOADTCDB,TFNULL
037DR 03B6R
037ER 026FR                          DC      TEST.3D.
037FR 020ER                          DC      RDFSUUR
0380R 026FR                          DC      TEST.3E.
0381R 00ECP                          DC      CKTCDB,TFFS85
0382R 0406R
                                     ENDM
                     0824            CKFSII  106                  83-87
0383R 026FR                          DC      TEST.3F.
0384R 0202P                          DC      RESETFSU
0385R 00BER                          DC      LOADTCDB,TF106
0386R 03AER
0387R 026FR                          DC      TEST.40.
0388R 0206R                          DC      TCPSTF
0389R 006A                           DC      106
038AR 00BER                          DC      LOADTCDB,TFNULL
038BR 03B6R
038CR 026FR                          DC      TEST.41.
038DR 020ER                          DC      RDFSUUR
038ER 026FR                          DC      TEST.42.
038FR 00ECR                          DC      CKTCDB,TFFS106
0390R 040ER
                                     ENDM
0391R 025AR          0825            DC      EDTEST
                     0826    *
                     0827    *       TEST DATA
                     0828    *
0392R AAA8           0829    PDW1    DC      %AAA8
0393R 0072           0830            DC      %0072
0394R 780C           0831            DC      %780C
0395R 1FFF           0832            DC      %1FFF
0396R 0070           0833    TF31    DC      %0070,%0FFF
0397R 0FFF           0833
0398R 1000           0834            DC      %1000,%1000
0399R 1000           0834
039AR AA0C           0835            DC      %AA0C,0
039BR 0000           0835
039CR AAA8           0836            DC      %AAA8,%3E08
039DR 3E08           0836
039ER 0470           0837    TF32    DC      %0470,%03FF
039FR 03FF           0837
03A0R 1800           0838            DC      %1800,%0400
03A1R 0400           0838
03A2R 550E           0839            DC      %550E,0
03A3R 0000           0839
03A4R AAC0           0840            DC      %AAC0,%0308
03A5R 0308           0840
03A6R 1068           0841    TF85    DC      %1068,%1FFF
```

```
03A7R 1FFF    0841
03A8R 1000    0842          DC    %1000,%1000
03A9R 1000    0842
03AAR FF0E    0843          DC    %FF0E,0
03ABR 0000    0843
03ACR AAA8    0844          DC    %AAA8,%00F8
03ADR 00F8    0844
03AER 0C74    0845  TF106   DC    %0C74,%0FFF
03AFR 0FFF    0845
03B0R 0666    0846          DC    %0666,%019A
03B1R 019A    0846
03B2R 000C    0847          DC    %000C,0
03B3R 0000    0847
03B4R AA80    0848          DC    %AA80,%21F8
03B5R 21F8    0848
03B6R 0000    0849  TFNULL  DC    0,0,0,0
03B7R 0000    0849
03B8R 0000    0849
03B9R 0000    0849
03BAR 0000    0850  PDWNULL DC    0,0,0,0
03BBR 0000    0850
03BCR 0000    0850
03BDR 0000    0850
03BER AAA0    0851  CF1     DC    %AAA0,%0072
03BFR 0072    0851
03C0R 0000    0852          DC    0,0
03C1R 0000    0852
03C2R AAA8    0853  BPDW1   DC    %AAA8,0
03C3R 0000    0853
03C4R 0072    0854          DC    %0072,0
03C5R 0000    0854
03C6R 780C    0855          DC    %780C,0
03C7R 0000    0855
03C8R 1FFF    0856          DC    %1FFF,0
03C9R 0000    0856
03CAR 0000    0857  CF2     DC    0,0
03CBR 0000    0857
03CCR 0000    0858          DC    0,%F000
03CDR F000    0858
03CER AAA8    0859  REPDW1  DC    %AAA8,0
03CFR 0000    0859
03D0R 0000    0860          DC    0,0
03D1R 0000    0860
03D2R 0000    0861          DC    0,0
03D3R 0000    0861
03D4R 0072    0862          DC    %0072,0
03D5R 0000    0862
      03D6R   0863  TFCS31  EQU   *
03D6R 7FE9    0864          DC    %7FE9,%0004,0,0,0,0,0,0
03D7R 0004    0864
03D8R 0000    0864
03D9R 0000    0864
03DAR 0000    0864
03DBR 0000    0864
```

```
03DCR 0000     0864
03DDR 0000     0864
      03DER    0865  TFCS32   EQU   #
03DER 7FC9     0866           DC    %7FC9,%0004,0,0,0,0,0,0
03DFR 0004     0866
03E0R 0000     0866
03E1R 0000     0866
03E2R 0000     0866
03E3R 0000     0866
03E4R 0000     0866
03E5R 0000     0866
      03E6R    0867  TFCS85   EQU   #
03E6R 7FEB     0868           DC    %7FEB,%0004,0,0,0,0,0,0
03E7R 0004     0868
03E8R 0000     0868
03E9R 0000     0868
03EAR 0000     0868
03EBR 0000     0868
03ECR 0000     0868
03EDR 0000     0868
      03EER    0869  TFCS106  EQU   #
03EER 7FE9     0870           DC    %7FE9,%0004,0,0,0,0,0,0
03EFR 0004     0870
03F0R 0000     0870
03F1R 0000     0870
03F2R 0000     0870
03F3R 0000     0870
03F4R 0000     0870
03F5R 0000     0870
      03F6R    0871  TFFS31   EQU   #
03F6R 0070     0872           DC    %0070,%1FFF
03F7R 1FFF     0872
03F8R 0000     0873           DC    0,0
03F9R 0000     0873
03FAR AA0C     0874           DC    %AA0C,0
03FBR 0000     0874
03FCR AAA8     0875           DC    %AAA8,%3E08
03FDR 3E08     0875
      03FER    0876  TFFS32   EQU   #
03FER 0470     0877           DC    %0470,%1FFF
03FFR 1FFF     0877
0400R 0000     0878           DC    0,0
0401R 0000     0878
0402R 550E     0879           DC    %550E,0
0403R 0000     0879
0404R AAC0     0880           DC    %AAC0,%0308
0405R 0308     0880
      0406R    0881  TFFS85   EQU   #
0406R 1068     0882           DC    %1068,%1FFF
0407R 1FFF     0882
0408R 0000     0883           DC    0,0
0409R 0000     0883
040AR FF0E     0884           DC    %FF0E,0
040BR 0000     0884
```

```
040CR AAA8     0885              DC     %AAA8,%00F8
040DR 00F8     0885
       040ER   0886  TFFS106     EQU    *
040ER 0C74     0887              DC     %0C74,%1FFF
040FR 1FFF     0887
0410R 0000     0888              DC     0,0
0411R 0000     0888
0412R 000C     0889              DC     %000C,0
0413R 0000     0889
0414R AA80     0890              DC     %AA80,%21F8
0415R 21F8     0890
0416R          0892              END

0000  ERRS
```

```
0056  ACTUAL     0234S 0250S 0341S 0371S 0458S 0479S 0497S 0561S 0606S
004ER BHRUPT     0619
005ER BHRUPT0      NO REFERENCES
0066R BHRUPT1    0193J
0002R BHTEST     0192  0194S 0634S 0642S
03C2R BPDW1      0760  0780  0819
03BER CF1        0737
03CAR CF2        0767
0010  CFMSGHI    0120
0252R CKBHRU1    0644J
023ER CKBHRUPT   0709
010CR CKCSM      0727  0728  0729  0730
0117R CKCSM1     0363J
011AR CKCSM2     0365J
011CR CKCSM3     0368J
0091R CKIBST1    0238J
0080R CKIBSTAT   0711  0734
00ECR CKTCDB     0727  0728  0729  0730  0759  0779  0821  0822  0823  0824
00F3R CKTCDB1    0338J
00FAR CKTCDB2    0336J
01EBR CKTCIR     0793  0798  0803  0808  0813
01FCR CKTCIR1    0565J
021AR CKTCISW    0706
022BR CKTCISW1   0612J
00A4R CKTCST1    0254J
0093R CKTCSTAT   0714  0721  0749  0753  0764
00AER CLRBMFMT   0718
00B6R CLRBPDW    0723
0059  CMND       0104  0107  0689
005A  CSTATUS    0106  0108
005F  DIBSTAT    0170S
005D  DTCISW     0166S
005E  DTCSTAT    0168S
022DR ENBBHUNG   0700
0267R EOT1       0672J
025AR EOTEST     0825
0028R ERP1       0240J 0256J 0317J 0345J 0372J 0464J 0483J 0501J 0524J 0567J
                 0614J 0646J
0057  EXPECT     0236S 0252S 0343S 0367S 0369S 0445S 0476S 0493S 0563S 0605S
0017R GETARG     0232J 0235J 0248J 0251J 0292J 0304J 0322J 0331J 0350J 0360J
                 0383J 0395J 0405J 0412J 0439J 0441J 0443J 0472J 0475J 0489J
                 0492J 0559J 0562J 0582J 0595J 0604J 0609J 0653J
0059  IBIR       0399S 0420S 0536S
0148R IBSPDW     0751
005A  IBSTATUS   0231S
0058  INDEX      0344S 0446S 0473S 0490S
0078R INITFIFO   0702
0074R INITIB     0701
01D1R INITIB1    0540J
01CDR INITIBCF   0731
007CR INITTC     0703
01AER INITTD1    0522J
01CBR INITTD2    0512J 0519J
01ACR INITTDM    0726
```

```
0E3R INTGTCSM  0789
005B ISTATUS   0105
0212R LDTCISW  0704
01FER LDTCSPDW 0820
012CR LOADIB1  0389J
0125R LOADIBDB 0736  0741  0747  0766  0769
00C5R LOADTC1  0298J
00BER LOADTCDB 0727  0727  0728  0728  0729  0729  0730  0730  0755  0786
               0818  0821  0821  0822  0822  0823  0823  0824  0824
0254R LOADTCIR   NO REFERENCES
0010R MAIN     0133J
0258R NOPROUT    NO REFERENCES
0392R PDW1     0747  0769
03BAR PDWNULL  0742
0014R PTR      0126S 0129  0132S 0137S 0138  0173
0104R RDCSM    0727  0728  0729  0730
020ER RDFSUUR  0821  0822  0823  0824
0182R RDIBP1   0478
0183R RDIBP2   0495
0197R RDIBRF   0746
01AAR RDIBRF1  0499J
0184R RDIBVAF  0744
0195R RDIBVAF1 0481J
01E7R RDTCMAR  0791  0796  0801  0806  0811
00E5R RDTRACK  0727  0728  0729  0730
03CER REPDW1   0787
0202R RESETFSU 0821  0822  0823  0824
0015R RETURN   0182J 0215J 0219J 0224J 0239J 0255J 0261J 0266J 0271J 0276J
               0281J 0286J 0299J 0316J 0339J 0366J 0377J 0390J 0400J 0421J
               0463J 0482J 0500J 0523J 0541J 0566J 0598J 0613J 0628J 0645J
               0658J 0680J 0693J
01FR RINIT     0128J
0024R RINIT01  0157J
0081 SBHUNG    0186S 0187S 0188S 0189S 0191S 0195  0196  0197
0041 SBMSGHI   0201  0204S 0206S
0051 SBMSGLO   0154  0163  0177S 0179S 0180  0663  0666S 0674S
00BAR SETBMFMT 0724
00A6R SETBPDW  0716
0121R SETIBRUN 0732
00B2R SETTCRUN 0719
00AAR SETUPDW  0717
D027 SFDSBIB     NO REFERENCES
D026 SFENBIB     NO REFERENCES
D022 SFFLSHIB    NO REFERENCES
D02B SFIBIR    0169  0230  0398S 0419S 0535S
D024 SFINFIFO  0218S
D025 SFINITIB  0214S 0636
0011 SFMSGHI   0207S
FEFF SFPINMSK  0622S
D038 SFRDRF    0471
D030 SFRDVAZ   0470
D006 SFRESET     NO REFERENCES
D023 SFRPDWIB    NO REFERENCES
D02A SFRUNIB   0376S
```

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D029  SFSSSIB     NO REFERENCES
D028  SFSTEPIB    NO REFERENCES
D008  SFTCBPDD    0280S
D009  SFTCBPDE    0260S
D00C  SFTCBUFD    0270S
D00D  SFTCBUFE    0285S
D007  SFTCINIT    0223S
D00E  SFTCRUN     0275S
D00F  SFTCSTEP    NO REFERENCES
D00A  SKDUPDW     NO REFERENCES
D00B  SKEUPDW     0265S
D02C  SKIBDB      0382  0531S
5400  SKRDTF      0324
C400  SKTCDB      0291  0330  0359  0509S
7E00  SKTCHALT    NO REFERENCES
D000  SKTCIR      0307S 0448S 0511S 0557
D001  SKTCISW     0165  0596S 0605  0624S
D003  SKTCSEQ1    NO REFERENCES
D004  SKTCSEQ2    NO REFERENCES
D005  SKTCSEQ3    NO REFERENCES
D002  SKTCSTAT    0167  0246  0312  0453  0516
4800  SKWRTF      0306  0510
0281R SORTTEST    0125
0140  STACK       0121
0005R START       0002J
0154R TCFLSHBP    0762
0059  TCIR        0309S 0450S 0513S 0558S
005B  TCISW       0597S 0606S 0625S
0163R TCPBP1      0462J
0180R TCPBP2      0449J 0456J 0460J
0158R TCPBPDW     0771  0774
0206R TCPSTF      0821  0822  0823  0824
0150R TCRDBPDW    0757  0777
005A  TCSTATUS    0247S 0313S 0454S 0517S
026FR TEST....    0705  0708  0710  0713  0720  0725  0727  0727  0727  0727
                  0727  0728  0728  0728  0728  0728  0729  0729  0729  0729
                  0729  0730  0730  0730  0730  0730  0733  0743  0745  0748
                  0752  0756  0758  0761  0763  0770  0773  0776  0778  0788
                  0790  0792  0795  0797  0800  0802  0805  0807  0810  0812
                  0821  0821  0821  0821  0822  0822  0822  0822  0823  0823
                  0823  0823  0824  0824  0824  0824
0003R TESTNO      0123S 0171  0679S
03AER TF106       0730  0730  0824
0396R TF31        0727  0727  0821
039ER TF32        0728  0728  0822
03A6R TF85        0729  0729  0823
03EER TFCS106     0730
03D6R TFCS31      0727
03DER TFCS32      0728
03E6R TFCS85      0729
040ER TFFS106     0824
03F6R TFFS31      0821
03FER TFFS32      0822
0406R TFFS85      0823
```

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0386R TPNULL    0727  0728  0729  0730  0755  0821  0822  0823  0824
0053  TRACK     0305S 0323S 0351S 0508S 0583S 0668
0054  TTNO      0172S
0055  TTPTR     0174S
027CR UNIT....  0699  0785
027CR UNIT1     0692J
2004R UNITNO    0124S 0176  0685S 0686S
001CR WAIT      0146J 0311J 0452J 0515J
2710  WAITCT    0310  0451  0514
0136R WRIBF1    0407J 0414J
0132R WRIBFREQ  0738
0143R WRIBRF    0740  0768
013ER WRIBVAZ   0739
00D1R WRTRAC0   0325J 0353J 0426J 0431J 0546J 0551J 0572J 0577J 0585J 0590J
                0654J
00E3R WRTRAC1   0308J 0315J
00CBR WRTRACK   0727  0728  0729  0730
```